

CLAIMS

1. A glass-plate working apparatus comprising:
grinding means for grinding a peripheral edge of a glass plate; and
grinding supporting means for supporting the glass plate whose peripheral edge is to be ground by said grinding means,
wherein said grinding supporting means includes a grinding supporting table, a plurality of suction cups which are held on said grinding supporting table by being attached by suction to said grinding supporting table and suck and hold the glass plate by sucking the glass plate whose peripheral edge is to be ground, and arranging means for disposing said plurality of suction cups, respectively, at positions corresponding to a shape of the glass plate to be ground.
2. A glass-plate working apparatus comprising:
bend-breaking means for forming a cut line on a glass plate and for bend-breaking the glass plate by press-breaking along the cut line the glass plate with the cut line formed thereon; grinding means for grinding a peripheral edge of the glass plate bend-broken by said bend-breaking means; bend-breaking supporting means for supporting the glass plate to be bend-broken by said bend-breaking means; grinding supporting means for supporting the glass plate whose peripheral edge is to be ground by said grinding means; and transporting means for transporting the glass plate to said bend-breaking supporting means and said grinding supporting means,
wherein said grinding supporting means includes a grinding supporting table, a plurality of suction cups which are held on said grinding supporting table by being attached by suction to said grinding supporting table and suck and hold the glass plate by sucking the glass plate whose peripheral edge is to be ground, and arranging means

for disposing said plurality of suction cups, respectively, at positions corresponding to a shape of the glass plate to be ground.

3. The glass-plate working apparatus according to claim 2, wherein said transporting means includes a first transporting device for transporting the glass plate to be bend-broken to said bend-breaking supporting means; and a second transporting means for transporting to said grinding supporting means the glass plate whose peripheral edge is to be ground and for carrying out the glass plate whose peripheral edge has been ground from said grinding supporting means,

wherein while the glass plate is being bend-broken by said bend-breaking means, said second transporting device is adapted to carry out the glass plate whose peripheral edge has been ground from on said suction cups, and said arranging means is adapted to arrange the suction cups, respectively, at positions corresponding to the shape of the glass plate being bend-broken.

4. The glass-plate working apparatus according to claim 2 or 3, wherein said bend-breaking means includes a bend-breaking head having a cutter wheel for forming the cut line by abutting against the glass plate and a push rod for push-breaking the glass plate by pressing, and bend-breaking-head moving means for moving said bend-breaking head relative to the glass plate.

5. The glass-plate working apparatus according to any one of claims 2 to 4, wherein said bend-breaking means includes cut-line forming means for forming the cut line on the glass plate and push-breaking means for push-breaking the glass plate with the cut line formed thereon by said cut-line forming means,

wherein said cut-line forming means includes a cut-line forming head and cut-line-forming-head moving means for moving said cut-line forming head relative to the glass plate, and said push-breaking means includes a push-breaking head and

push-breaking-head moving means for moving said push-breaking head relative to the glass plate.

6. The glass-plate working apparatus according to any one of claims 1 to 5, wherein said arranging means is adapted to be used in common for said suction cups.

7. The glass-plate working apparatus according to any one of claims 1 to 6, wherein said arranging means is adapted to arrange said suction cups at positions corresponding to the shape of the bend-broken glass plate.

8. The glass-plate working apparatus according to any one of claims 1 to 7, wherein said arranging means has suction-cup supporting body for supporting said suction cups separately from said grinding supporting table, and is adapted to move the suction cup from on said grinding supporting table onto said suction-cup supporting body or from on said suction-cup supporting body onto said grinding supporting table in correspondence with the shape of the glass plate.

9. The glass-plate working apparatus according to any one of claims 1 to 8, wherein said arranging means includes a suction-cup lifting device for raising the suction cup and a suction-cup moving device for moving the suction cup raised by said suction-cup lifting device.

10. The glass-plate working apparatus according to claim 9, wherein said suction cup includes a cylindrical body whose upper surface is covered with an elastic member for abutment against the glass plate; a disk body for abutment against said grinding supporting table; and a connecting shaft which connects said disk body and said cylindrical body,

wherein said suction-cup lifting device has at least two grip arms which are moved close to or away from each other, and said grip arms respectively have recessed surfaces which are recessed with respect to said cylindrical body, said grip arms being

adapted to grip said suction cup as the recessed surfaces are respectively abutted against peripheral edge portions of said cylindrical body while approaching each other.

11. The glass-plate working apparatus according to any one of claims 1 to 10, wherein said suction cup has an annular abutment surface for abutment against said grinding supporting table and a recessed surface which is recessed with respect to said grinding supporting table, and is adapted to be attached by suction to said grinding supporting table through an opening in the recessed surface.

12. The glass-plate working apparatus according to claim 11, wherein said suction cup includes said disk body having the annular abutment surface and the recessed surface; said cylindrical body whose upper surface is covered with said elastic member for abutment against a lower surface of the glass plate; and said connecting shaft which connects said disk body and said cylindrical body, said suction cup being adapted to suck the glass plate through an opening in an upper surface of said elastic member and to be attached by suction to said grinding supporting table through the opening in the recessed surface of said disk body.